

### **DETAILED ACTION**

1. This Office Action is a response to the remarks filed on October 16, 2009. No claims have been amended and cancelled; claims 44-46 have been added.
2. The Declaration under 37 CFR 1.132 filed on October 16, 2009 is sufficient to overcome the rejection of claims 14, 15, 16, 17, and 31-43 based upon 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Muller et al. (U. S. Patent 5,098,550) as evidenced by Hackh's Chemical Dictionary.
3. Claims 14, 15, 26, 27, and 31-46 are now pending.

### ***Allowable Subject Matter***

4. Claims 14, 15, 26, 27, and 31-46 are allowed.
5. The following is examiner's statement of reasons for allowance:

The present claims are allowable over the closest reference: Mueller et al. (U. S. Patent 5,098,550).

Mueller discloses a method for the solvent dewaxing of petroleum products containing wax, particularly of petroleum oil distillates, by the use of at least one solvent suitable for dewaxing and of a polymeric dewaxing aid comprising a polyacrylate, the products to be dewaxed being mixed with the solvent and the polymeric dewaxing aid, the mixture obtained being chilled, and the precipitated wax being separated, which method is characterized in that the dewaxing aid used is a polymer mixture.

The method of Mueller et al. comprises adding a dewaxing additive and a solvent to the petroleum oil distillates containing wax to obtain a mixture (col. 2, lines 19-25).

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Mueller et al. also discloses that the mixture is then stirred until a clear solution results (col. 6, lines 47-50). The solution of Mueller et al is then cooled at a given rate to precipitate out the wax (col. 2, lines 25-26, col. 4, lines 26-36, and col. 6, lines 50-53).

Mueller et al. disclose that the temperature to which the solution is cooled can be as low as  $-50^{\circ}\text{C}$  (col. 4, lines 26-36).

The precipitated wax is separated from the solution by filtration to obtain dewaxed mineral oil distillates (col. 2, line 26, col. 6, line 50 through col. 7, line 4). As the dewaxing additive, Mueller et al. discloses the use of a polymer P2. Polymer P2 can be polyalkyl methacrylates wherein the alkyl group contains 1-40 carbons. Mueller et al even disclose that polymer P2 can be made from a combination of alkyl methacrylates having 12-18 carbons and alkyl methacrylates having 1-9 carbons (col. 3, lines 25-39).

In an example for P2, Example 7 demonstrates the production of P2-6 which is a poly  $\text{C}_1\text{-C}_{18}$  alkyl methacrylate. P2-6 is made up from  $\text{C}_1\text{-C}_{18}$  alkyl methacrylate and methyl methacrylate. (Example 7, bridging columns 5-6). The  $\text{C}_1\text{-C}_{18}$  alkyl methacrylate of P2-6 corresponds with Formula B as recited in claim 14 where  $\text{R}^7$  is  $\text{CH}_3$  and  $\text{R}^8$  is linear or branched alkyl of  $\text{C}_1\text{-C}_{18}$  and the methyl methacrylate of P2-6 corresponds with Formula A as recited in claim 14 where  $\text{R}^1$  is  $\text{CH}_3$ ,  $\text{R}^2$  is  $\text{COOR}^3$ , and  $\text{R}^3$  is  $\text{O}1$ . In addition, the additive P2-5 as shown in Example 6 (col. 5), also appears to meet the limitations of the additive of claim 14. The methacrylic ester of isodecyl alcohol corresponds with Formula A of claim 14 where  $\text{R}^1$  is  $\text{CH}_3$ ,  $\text{R}^2$  is  $\text{COOR}^3$ , and  $\text{R}^3$  is  $\text{C}_{10}$ , and the methacrylic ester of tallow fatty alcohol (average C value of 17) corresponds

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with Formula B as recited in claim 14 where  $R^7$  is  $CH_3$  and  $R^8$  is linear or branched alkyl of  $C_{17}$ . These two additives, P2-5 and P2-6, were used in Examples 8- 10 (col. 6-8)

With regard to the petroleum stocks, which are amenable to dewaxing, the method does not appear to have any definite limitations. From a practical point of view, however, it is particularly well suited for waxy distillate oils, especially those with a boiling range from about  $300^{\circ}C$  to about  $600^{\circ}C$ , a density of about 0.08 to 0.09 g/cc at  $15^{\circ}C$ , a viscosity of about 10 to 20 cSt/ $100^{\circ}C$ , a pour point of about  $30^{\circ}C$  to  $50^{\circ}C$ , and a dry wax content of about 10 to about 25 weight percent. Most desirable are distillate oil fractions, which include lubricating oils and specialty oils boiling within the range of  $300^{\circ}C$  to  $600^{\circ}C$ , and preferably those with a mid-boiling point of about  $400^{\circ}C$  to  $450^{\circ}C$  (col. 2, line 19 through col. 4, line 55).

Mueller discloses that the most widely used commercial process for the dewaxing of waxy petroleum oils employs solvents, mainly low-boiling aliphatic hydrocarbons such as pentane, hexane, heptane, octane, etc.; ketones such as acetone, methylethyl ketone, methylisobutyl ketone, etc.; aromatic hydrocarbons such as benzene, toluene, xylene, etc.; and mixtures of solvents. Here, too, the wax-containing oil which has been mixed with the solvent is chilled until the wax precipitates in the form of fine particles (col. 1, lines 21- 30).

However, Muller et al. do not disclose or fairly suggest the claimed method for solvent deparaffinization of paraffinic mineral oil distillates, comprising particularly an addition a dewaxing additive and a solvent to said paraffinic mineral oil distillates, to obtain a solvent-paraffinic mineral oil mixture, and cooling the solution to below  $-20^{\circ}C$  at

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a defined rate, thereby forming paraffin crystals which form a filter cake which is porous and permeable to the solution, as per claim 14.

As evidenced by the Declaration under 37 CFR 1.132, the addition a dewaxing additive allows to increase at least 10% a filtration volume per filtration time compared to the filtration volume per filtration time using no dewaxing additive as per claims 44-46, which is a significant advantage for the refiners and is unexpected result based on the prior art.

6. As of the date of this Notice of Allowability, the Examiner has not located or identified any reference that can be used singularly or in combination with another references including Muller et al. to render the present invention anticipated or obvious to one of ordinary skill in the art.

7. In the light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delay, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reason for Allowance".

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL M. BERNSHTEYN whose telephone number is (571)272-2411. The examiner can normally be reached on M-Th 8-6:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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